



# wwPDB EM Validation Summary Report ⓘ

Mar 29, 2026 – 12:45 PM JST

PDB ID : 9VED / pdb\_00009ved  
EMDB ID : EMD-64998  
Title : The cryo-EM structure of mouse Piezo1-MDFI complex  
Authors : Zhang, Y.; Dai, F.  
Deposited on : 2025-06-09  
Resolution : 3.63 Å (reported)

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

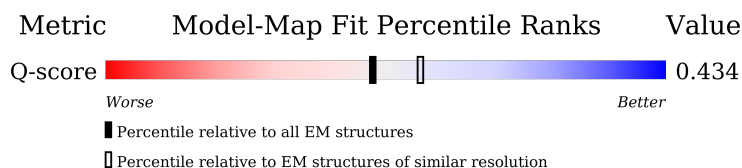
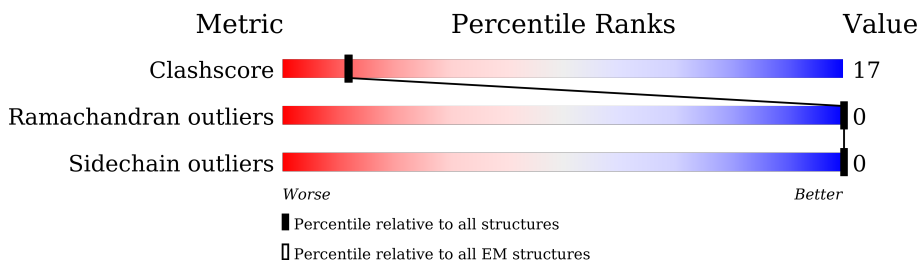
EMDB validation analysis : 0.0.1.dev132  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.48.1

# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:  
*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.63 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



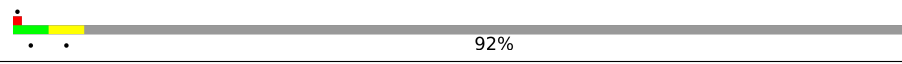
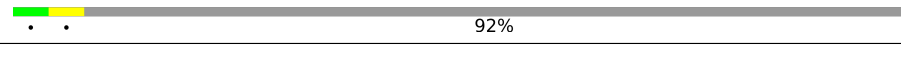
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	11696 ( 3.13 - 4.13 )

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	2815	 5% 29% 14% 57%
1	B	2815	 5% 29% 14% 57%
1	C	2815	 5% 29% 14% 57%
2	D	269	 6% . 92%

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Mol	Chain	Length	Quality of chain
2	E	269	 92%
2	F	269	 92%

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 29400 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Piezo-type mechanosensitive ion channel component 1, Green fluorescent protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1223	9652	6324	1626	1651	51	0	0
1	C	1223	9652	6324	1626	1651	51	0	0
1	B	1223	9652	6324	1626	1651	51	0	0

There are 105 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	2548	SER	-	linker	UNP E2JF22
A	2549	ASN	-	linker	UNP E2JF22
A	2550	SER	-	linker	UNP E2JF22
A	2551	LEU	-	linker	UNP E2JF22
A	2552	GLU	-	linker	UNP E2JF22
A	2553	VAL	-	linker	UNP E2JF22
A	2554	LEU	-	linker	UNP E2JF22
A	2555	PHE	-	linker	UNP E2JF22
A	2556	GLN	-	linker	UNP E2JF22
A	2557	GLY	-	linker	UNP E2JF22
A	2558	PRO	-	linker	UNP E2JF22
A	2559	THR	-	linker	UNP E2JF22
A	2560	ALA	-	linker	UNP E2JF22
A	2561	ALA	-	linker	UNP E2JF22
A	2562	ALA	-	linker	UNP E2JF22
A	2563	ALA	-	linker	UNP E2JF22
A	2564	VAL	-	linker	UNP E2JF22
A	2627	LEU	PHE	conflict	UNP P42212
A	2628	THR	SER	conflict	UNP P42212
A	2769	LYS	ALA	conflict	UNP P42212
A	2794	LEU	HIS	conflict	UNP P42212
A	2802	SER	-	expression tag	UNP P42212
A	2803	GLY	-	expression tag	UNP P42212

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Chain	Residue	Modelled	Actual	Comment	Reference
A	2804	GLY	-	expression tag	UNP P42212
A	2805	GLY	-	expression tag	UNP P42212
A	2806	HIS	-	expression tag	UNP P42212
A	2807	HIS	-	expression tag	UNP P42212
A	2808	HIS	-	expression tag	UNP P42212
A	2809	HIS	-	expression tag	UNP P42212
A	2810	HIS	-	expression tag	UNP P42212
A	2811	HIS	-	expression tag	UNP P42212
A	2812	HIS	-	expression tag	UNP P42212
A	2813	HIS	-	expression tag	UNP P42212
A	2814	HIS	-	expression tag	UNP P42212
A	2815	HIS	-	expression tag	UNP P42212
C	2548	SER	-	linker	UNP E2JF22
C	2549	ASN	-	linker	UNP E2JF22
C	2550	SER	-	linker	UNP E2JF22
C	2551	LEU	-	linker	UNP E2JF22
C	2552	GLU	-	linker	UNP E2JF22
C	2553	VAL	-	linker	UNP E2JF22
C	2554	LEU	-	linker	UNP E2JF22
C	2555	PHE	-	linker	UNP E2JF22
C	2556	GLN	-	linker	UNP E2JF22
C	2557	GLY	-	linker	UNP E2JF22
C	2558	PRO	-	linker	UNP E2JF22
C	2559	THR	-	linker	UNP E2JF22
C	2560	ALA	-	linker	UNP E2JF22
C	2561	ALA	-	linker	UNP E2JF22
C	2562	ALA	-	linker	UNP E2JF22
C	2563	ALA	-	linker	UNP E2JF22
C	2564	VAL	-	linker	UNP E2JF22
C	2627	LEU	PHE	conflict	UNP P42212
C	2628	THR	SER	conflict	UNP P42212
C	2769	LYS	ALA	conflict	UNP P42212
C	2794	LEU	HIS	conflict	UNP P42212
C	2802	SER	-	expression tag	UNP P42212
C	2803	GLY	-	expression tag	UNP P42212
C	2804	GLY	-	expression tag	UNP P42212
C	2805	GLY	-	expression tag	UNP P42212
C	2806	HIS	-	expression tag	UNP P42212
C	2807	HIS	-	expression tag	UNP P42212
C	2808	HIS	-	expression tag	UNP P42212
C	2809	HIS	-	expression tag	UNP P42212
C	2810	HIS	-	expression tag	UNP P42212

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Chain	Residue	Modelled	Actual	Comment	Reference
C	2811	HIS	-	expression tag	UNP P42212
C	2812	HIS	-	expression tag	UNP P42212
C	2813	HIS	-	expression tag	UNP P42212
C	2814	HIS	-	expression tag	UNP P42212
C	2815	HIS	-	expression tag	UNP P42212
B	2548	SER	-	linker	UNP E2JF22
B	2549	ASN	-	linker	UNP E2JF22
B	2550	SER	-	linker	UNP E2JF22
B	2551	LEU	-	linker	UNP E2JF22
B	2552	GLU	-	linker	UNP E2JF22
B	2553	VAL	-	linker	UNP E2JF22
B	2554	LEU	-	linker	UNP E2JF22
B	2555	PHE	-	linker	UNP E2JF22
B	2556	GLN	-	linker	UNP E2JF22
B	2557	GLY	-	linker	UNP E2JF22
B	2558	PRO	-	linker	UNP E2JF22
B	2559	THR	-	linker	UNP E2JF22
B	2560	ALA	-	linker	UNP E2JF22
B	2561	ALA	-	linker	UNP E2JF22
B	2562	ALA	-	linker	UNP E2JF22
B	2563	ALA	-	linker	UNP E2JF22
B	2564	VAL	-	linker	UNP E2JF22
B	2627	LEU	PHE	conflict	UNP P42212
B	2628	THR	SER	conflict	UNP P42212
B	2769	LYS	ALA	conflict	UNP P42212
B	2794	LEU	HIS	conflict	UNP P42212
B	2802	SER	-	expression tag	UNP P42212
B	2803	GLY	-	expression tag	UNP P42212
B	2804	GLY	-	expression tag	UNP P42212
B	2805	GLY	-	expression tag	UNP P42212
B	2806	HIS	-	expression tag	UNP P42212
B	2807	HIS	-	expression tag	UNP P42212
B	2808	HIS	-	expression tag	UNP P42212
B	2809	HIS	-	expression tag	UNP P42212
B	2810	HIS	-	expression tag	UNP P42212
B	2811	HIS	-	expression tag	UNP P42212
B	2812	HIS	-	expression tag	UNP P42212
B	2813	HIS	-	expression tag	UNP P42212
B	2814	HIS	-	expression tag	UNP P42212
B	2815	HIS	-	expression tag	UNP P42212

- Molecule 2 is a protein called Isoform I-mfA of MyoD family inhibitor.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	F	21	Total 148	C 86	N 21	O 33	S 8	0	0
2	D	21	Total 148	C 86	N 21	O 33	S 8	0	0
2	E	21	Total 148	C 86	N 21	O 33	S 8	0	0

There are 69 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	-22	MET	-	initiating methionine	UNP P70331
F	-21	ASP	-	expression tag	UNP P70331
F	-20	TYR	-	expression tag	UNP P70331
F	-19	LYS	-	expression tag	UNP P70331
F	-18	ASP	-	expression tag	UNP P70331
F	-17	ASP	-	expression tag	UNP P70331
F	-16	ASP	-	expression tag	UNP P70331
F	-15	ASP	-	expression tag	UNP P70331
F	-14	LYS	-	expression tag	UNP P70331
F	-13	GLY	-	expression tag	UNP P70331
F	-12	GLY	-	expression tag	UNP P70331
F	-11	GLY	-	expression tag	UNP P70331
F	-10	GLY	-	expression tag	UNP P70331
F	-9	SER	-	expression tag	UNP P70331
F	-8	SER	-	expression tag	UNP P70331
F	-7	THR	-	expression tag	UNP P70331
F	-6	THR	-	expression tag	UNP P70331
F	-5	ASN	-	expression tag	UNP P70331
F	-4	GLY	-	expression tag	UNP P70331
F	-3	SER	-	expression tag	UNP P70331
F	-2	SER	-	expression tag	UNP P70331
F	-1	ALA	-	expression tag	UNP P70331
F	0	THR	-	expression tag	UNP P70331
D	-22	MET	-	initiating methionine	UNP P70331
D	-21	ASP	-	expression tag	UNP P70331
D	-20	TYR	-	expression tag	UNP P70331
D	-19	LYS	-	expression tag	UNP P70331
D	-18	ASP	-	expression tag	UNP P70331
D	-17	ASP	-	expression tag	UNP P70331
D	-16	ASP	-	expression tag	UNP P70331
D	-15	ASP	-	expression tag	UNP P70331
D	-14	LYS	-	expression tag	UNP P70331
D	-13	GLY	-	expression tag	UNP P70331

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-12	GLY	-	expression tag	UNP P70331
D	-11	GLY	-	expression tag	UNP P70331
D	-10	GLY	-	expression tag	UNP P70331
D	-9	SER	-	expression tag	UNP P70331
D	-8	SER	-	expression tag	UNP P70331
D	-7	THR	-	expression tag	UNP P70331
D	-6	THR	-	expression tag	UNP P70331
D	-5	ASN	-	expression tag	UNP P70331
D	-4	GLY	-	expression tag	UNP P70331
D	-3	SER	-	expression tag	UNP P70331
D	-2	SER	-	expression tag	UNP P70331
D	-1	ALA	-	expression tag	UNP P70331
D	0	THR	-	expression tag	UNP P70331
E	-22	MET	-	initiating methionine	UNP P70331
E	-21	ASP	-	expression tag	UNP P70331
E	-20	TYR	-	expression tag	UNP P70331
E	-19	LYS	-	expression tag	UNP P70331
E	-18	ASP	-	expression tag	UNP P70331
E	-17	ASP	-	expression tag	UNP P70331
E	-16	ASP	-	expression tag	UNP P70331
E	-15	ASP	-	expression tag	UNP P70331
E	-14	LYS	-	expression tag	UNP P70331
E	-13	GLY	-	expression tag	UNP P70331
E	-12	GLY	-	expression tag	UNP P70331
E	-11	GLY	-	expression tag	UNP P70331
E	-10	GLY	-	expression tag	UNP P70331
E	-9	SER	-	expression tag	UNP P70331
E	-8	SER	-	expression tag	UNP P70331
E	-7	THR	-	expression tag	UNP P70331
E	-6	THR	-	expression tag	UNP P70331
E	-5	ASN	-	expression tag	UNP P70331
E	-4	GLY	-	expression tag	UNP P70331
E	-3	SER	-	expression tag	UNP P70331
E	-2	SER	-	expression tag	UNP P70331
E	-1	ALA	-	expression tag	UNP P70331
E	0	THR	-	expression tag	UNP P70331



















LEU	
ASP	
CYS	
ILE	
VAL	
ASP	
ALA	
C226	◆
C227	◆
E228	◆
S229	
L230	
D231	
I235	
E238	
C239	
L242	
C243	
F244	
S245	
S246	

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C3	Depositor
Number of particles used	56377	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	49.41	Depositor
Minimum defocus (nm)	1400	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.840	Depositor
Minimum map value	-1.588	Depositor
Average map value	0.009	Depositor
Map value standard deviation	0.057	Depositor
Recommended contour level	0.34	Depositor
Map size (Å)	400.9, 400.9, 400.9	wwPDB
Map dimensions	380, 380, 380	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.055, 1.055, 1.055	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	0.50	0/9876	0.59	0/13401
1	B	0.50	0/9876	0.59	0/13401
1	C	0.50	0/9876	0.59	0/13401
2	D	0.39	0/148	0.62	0/195
2	E	0.39	0/148	0.62	0/195
2	F	0.38	0/148	0.62	0/195
All	All	0.50	0/30072	0.59	0/40788

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	9652	0	9495	358	0
1	B	9652	0	9495	361	0
1	C	9652	0	9495	344	0
2	D	148	0	130	9	0
2	E	148	0	130	12	0
2	F	148	0	130	12	0
All	All	29400	0	28875	1005	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 17.

The worst 5 of 1005 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1029:ILE:HA	1:A:1033:TRP:CD1	1.98	0.98
1:B:1029:ILE:HA	1:B:1033:TRP:CD1	1.97	0.98
1:C:1029:ILE:HA	1:C:1033:TRP:CD1	1.98	0.98
1:B:1118:GLU:HB3	1:B:1120:GLN:HG3	1.48	0.95
1:A:1118:GLU:HB3	1:A:1120:GLN:HG3	1.49	0.94

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1193/2815 (42%)	1098 (92%)	95 (8%)	0	100	100
1	B	1193/2815 (42%)	1097 (92%)	96 (8%)	0	100	100
1	C	1193/2815 (42%)	1098 (92%)	95 (8%)	0	100	100
2	D	19/269 (7%)	18 (95%)	1 (5%)	0	100	100
2	E	19/269 (7%)	18 (95%)	1 (5%)	0	100	100
2	F	19/269 (7%)	18 (95%)	1 (5%)	0	100	100
All	All	3636/9252 (39%)	3347 (92%)	289 (8%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was

analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	983/2477 (40%)	983 (100%)	0	100	100
1	B	983/2477 (40%)	983 (100%)	0	100	100
1	C	983/2477 (40%)	983 (100%)	0	100	100
2	D	19/218 (9%)	19 (100%)	0	100	100
2	E	19/218 (9%)	19 (100%)	0	100	100
2	F	19/218 (9%)	19 (100%)	0	100	100
All	All	3006/8085 (37%)	3006 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 25 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	1748	GLN
1	B	1047	GLN
1	B	2389	GLN
1	C	2490	HIS
1	B	1225	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

### 5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

### 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

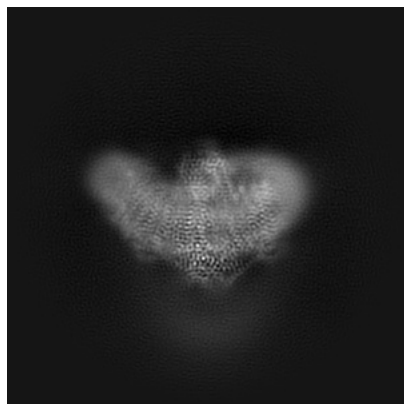
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-64998. These allow visual inspection of the internal detail of the map and identification of artifacts.

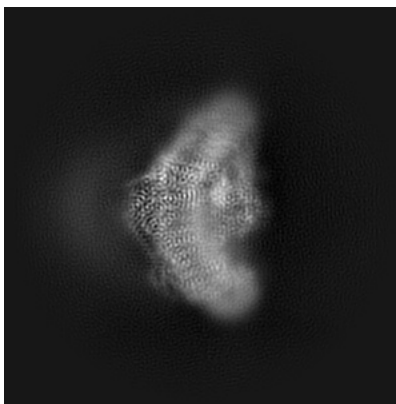
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

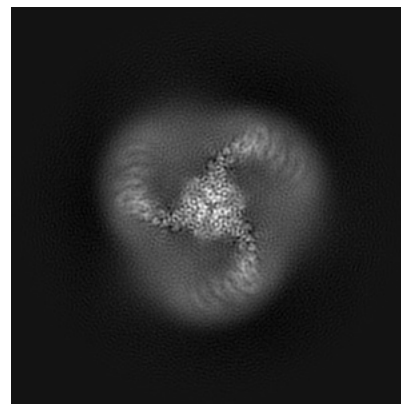
#### 6.1.1 Primary map



X

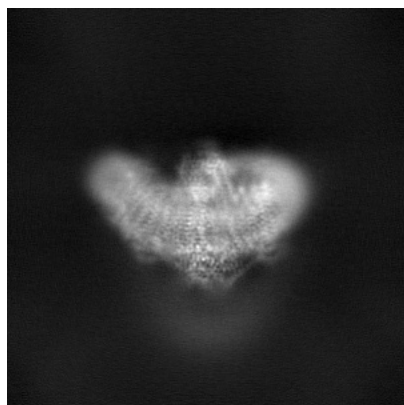


Y

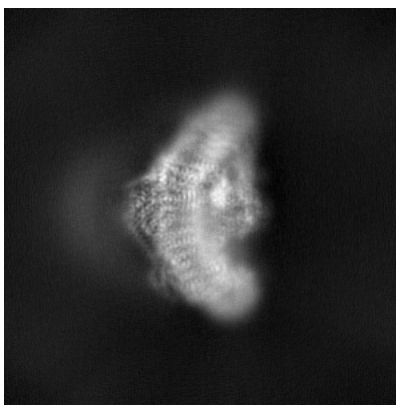


Z

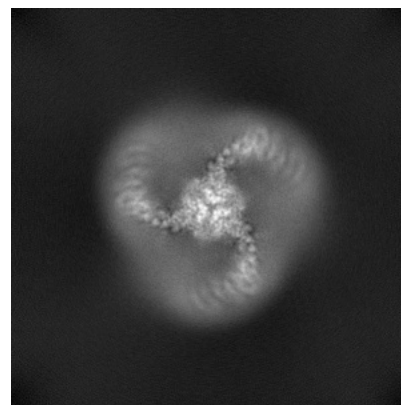
#### 6.1.2 Raw map



X



Y

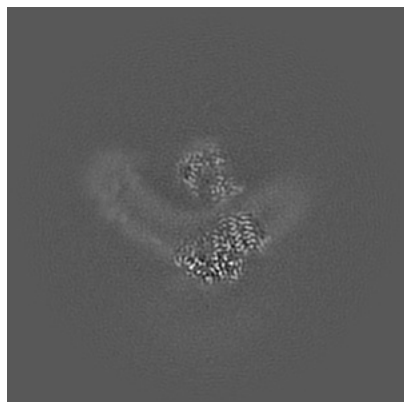


Z

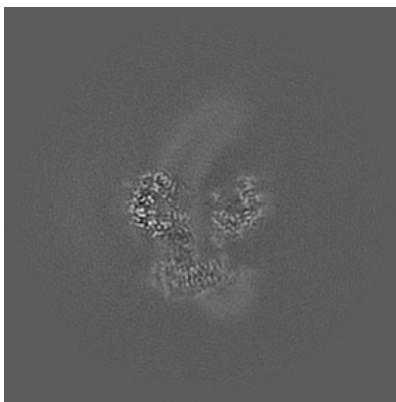
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

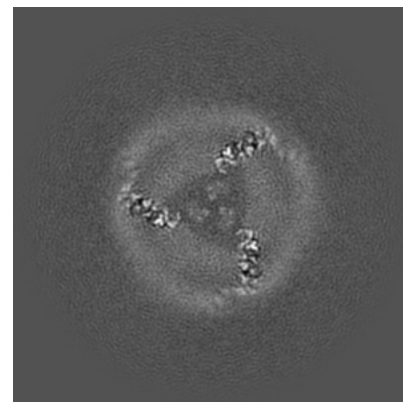
### 6.2.1 Primary map



X Index: 190

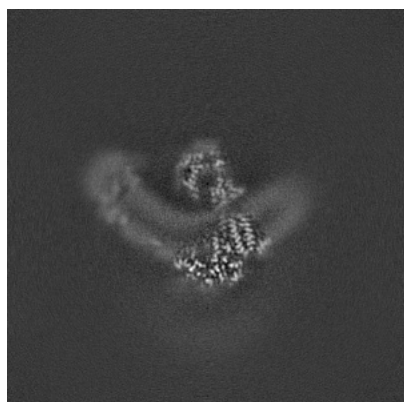


Y Index: 190

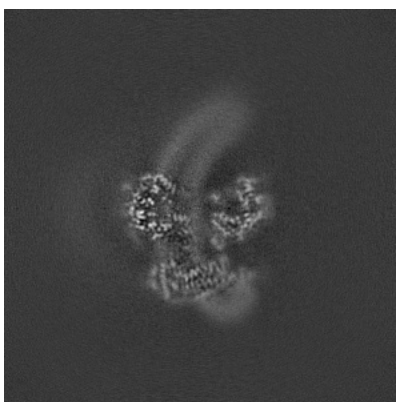


Z Index: 190

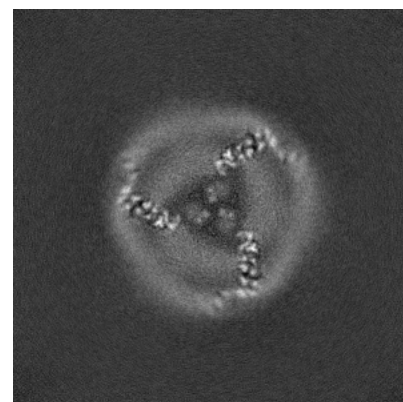
### 6.2.2 Raw map



X Index: 190



Y Index: 190

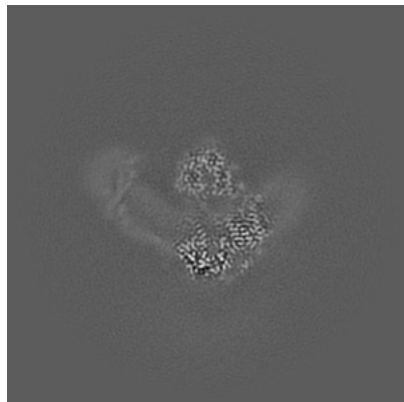


Z Index: 190

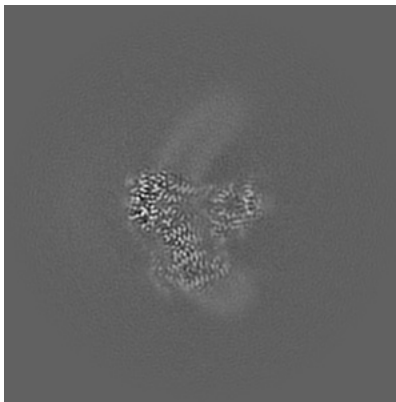
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

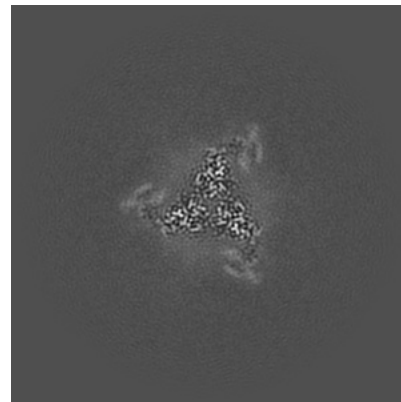
### 6.3.1 Primary map



X Index: 198

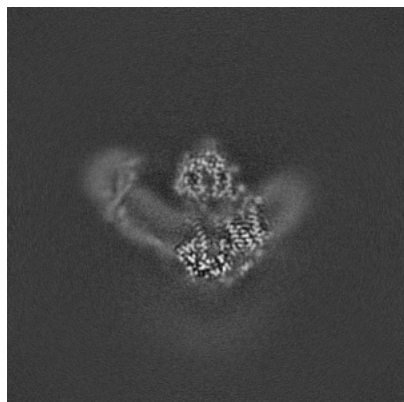


Y Index: 185

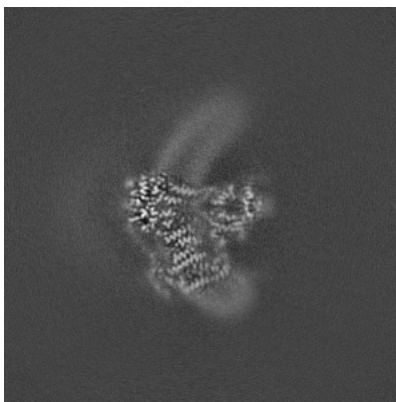


Z Index: 153

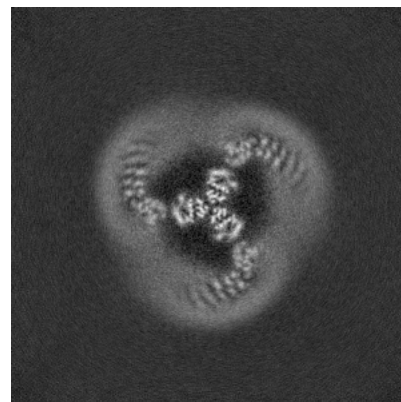
### 6.3.2 Raw map



X Index: 198



Y Index: 185

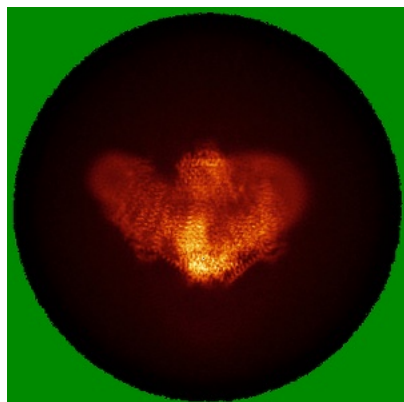


Z Index: 208

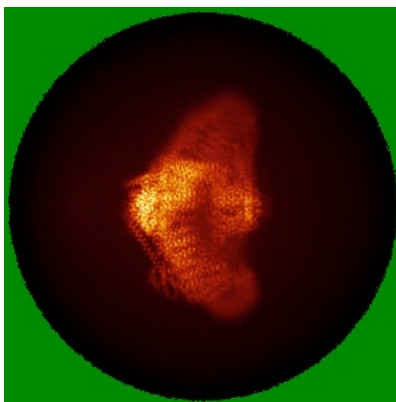
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

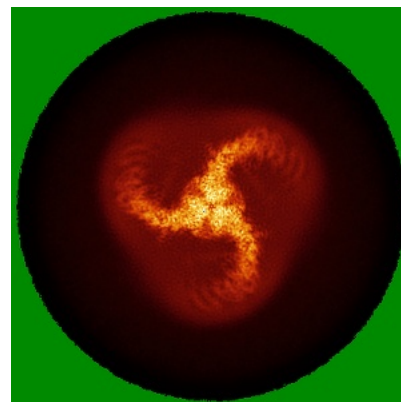
### 6.4.1 Primary map



X

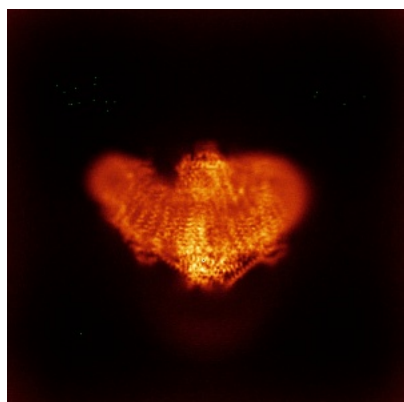


Y

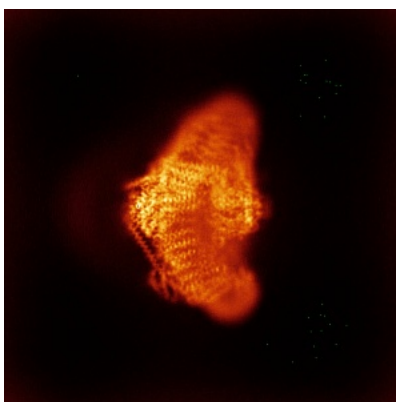


Z

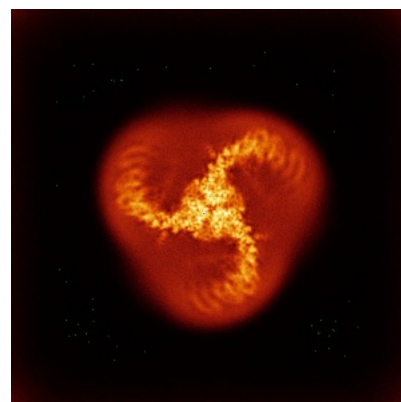
### 6.4.2 Raw map



X



Y



Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.34. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

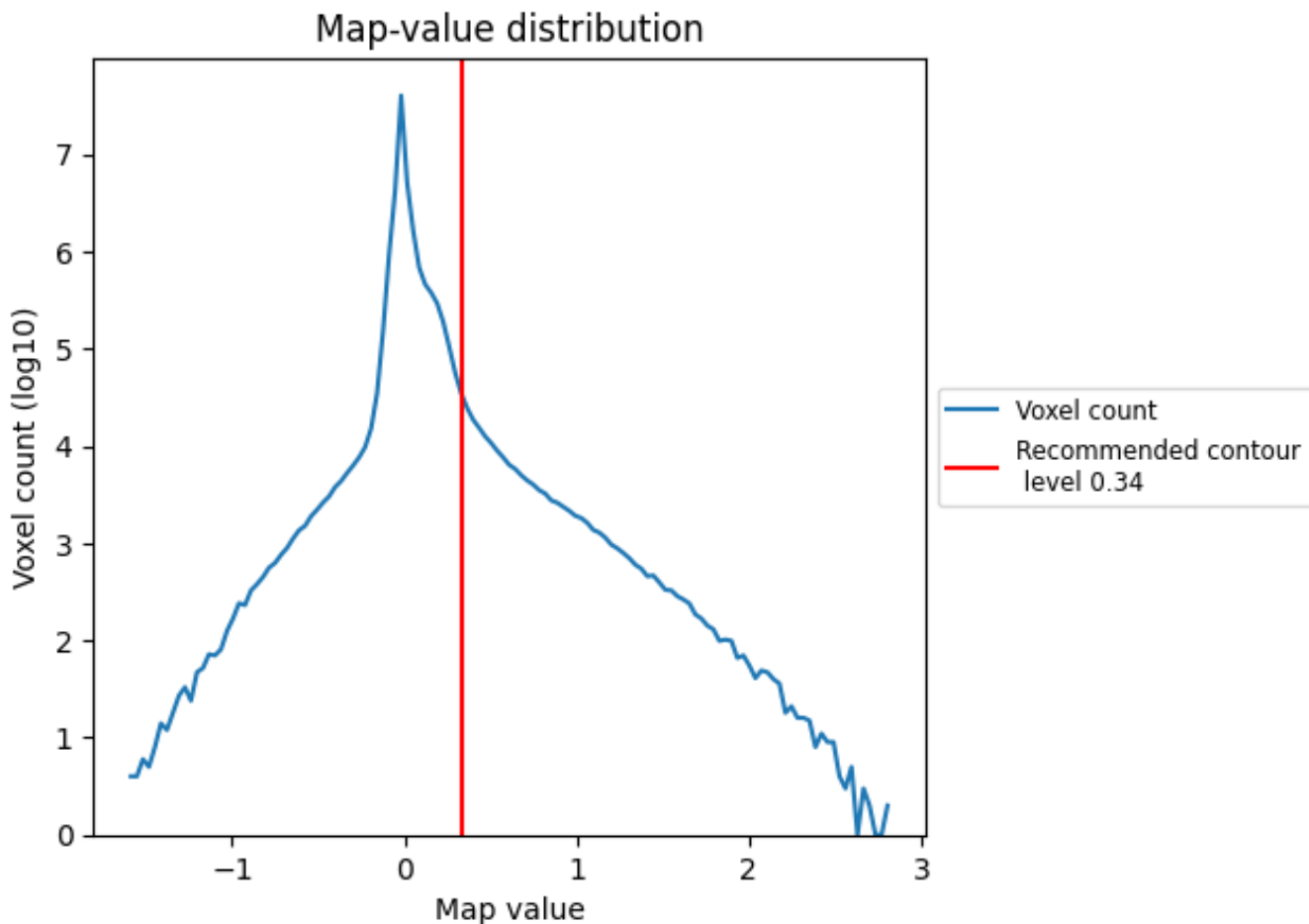
## 6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

## 7 Map analysis [i](#)

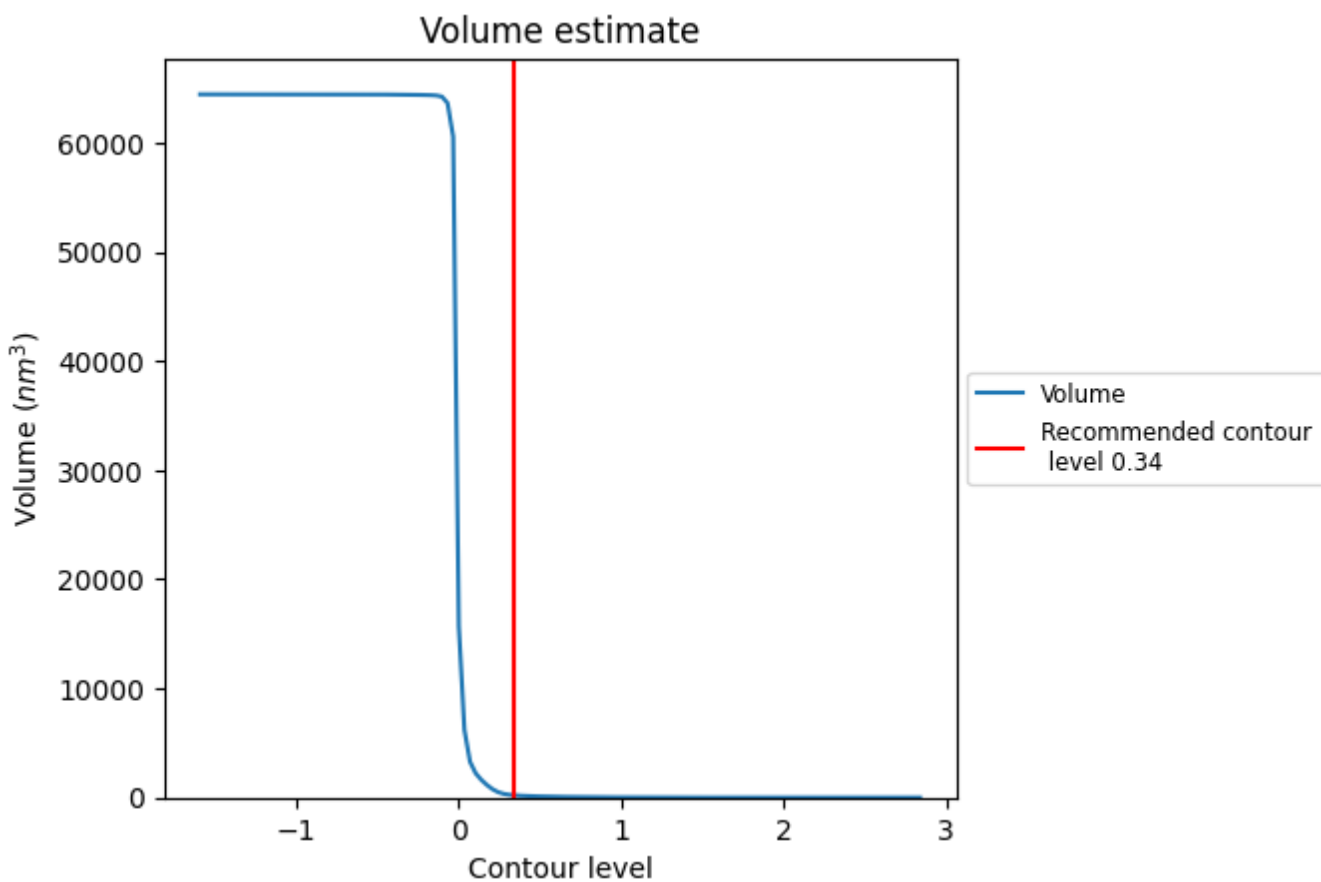
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

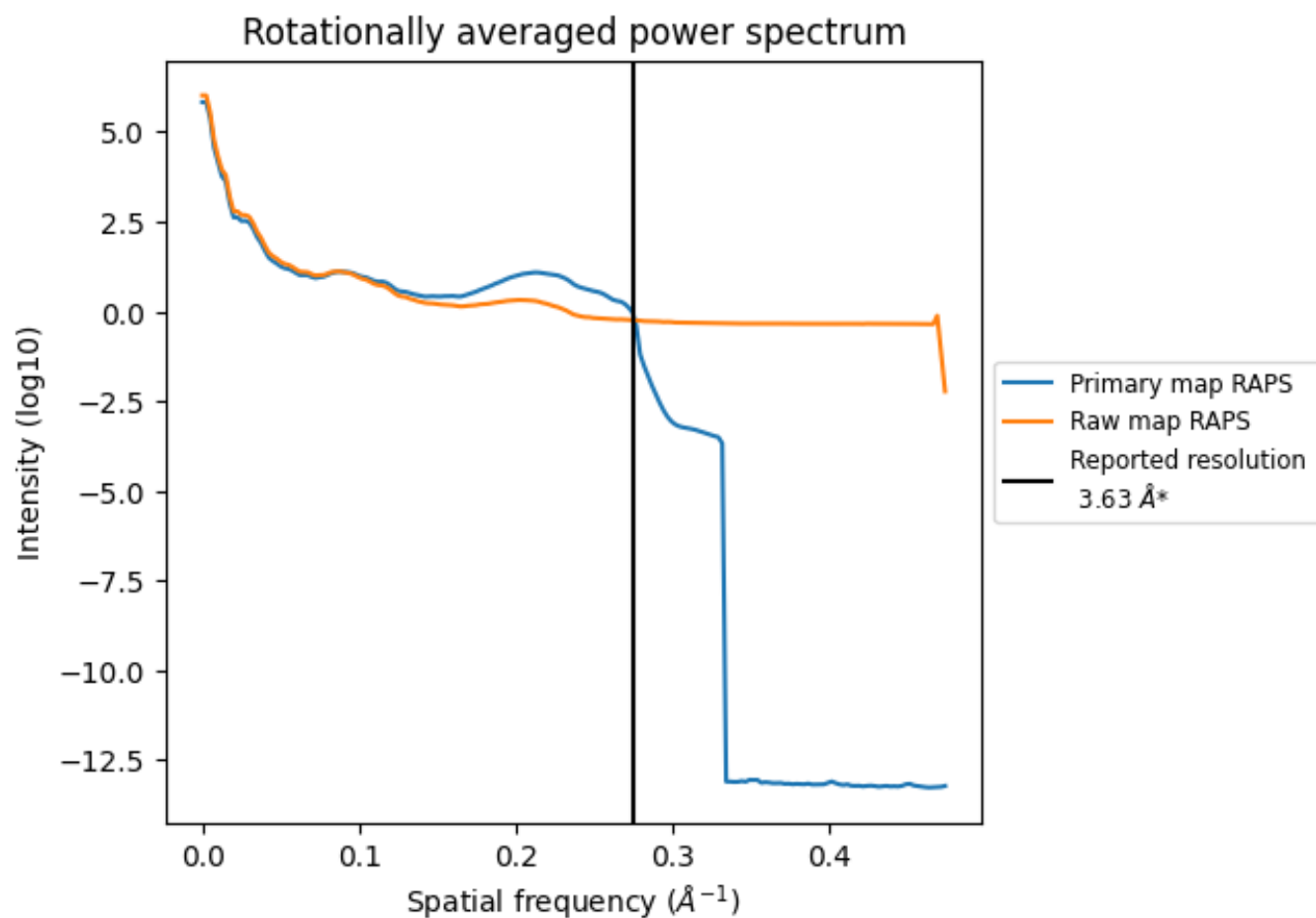
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 215 nm<sup>3</sup>; this corresponds to an approximate mass of 194 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum [i](#)

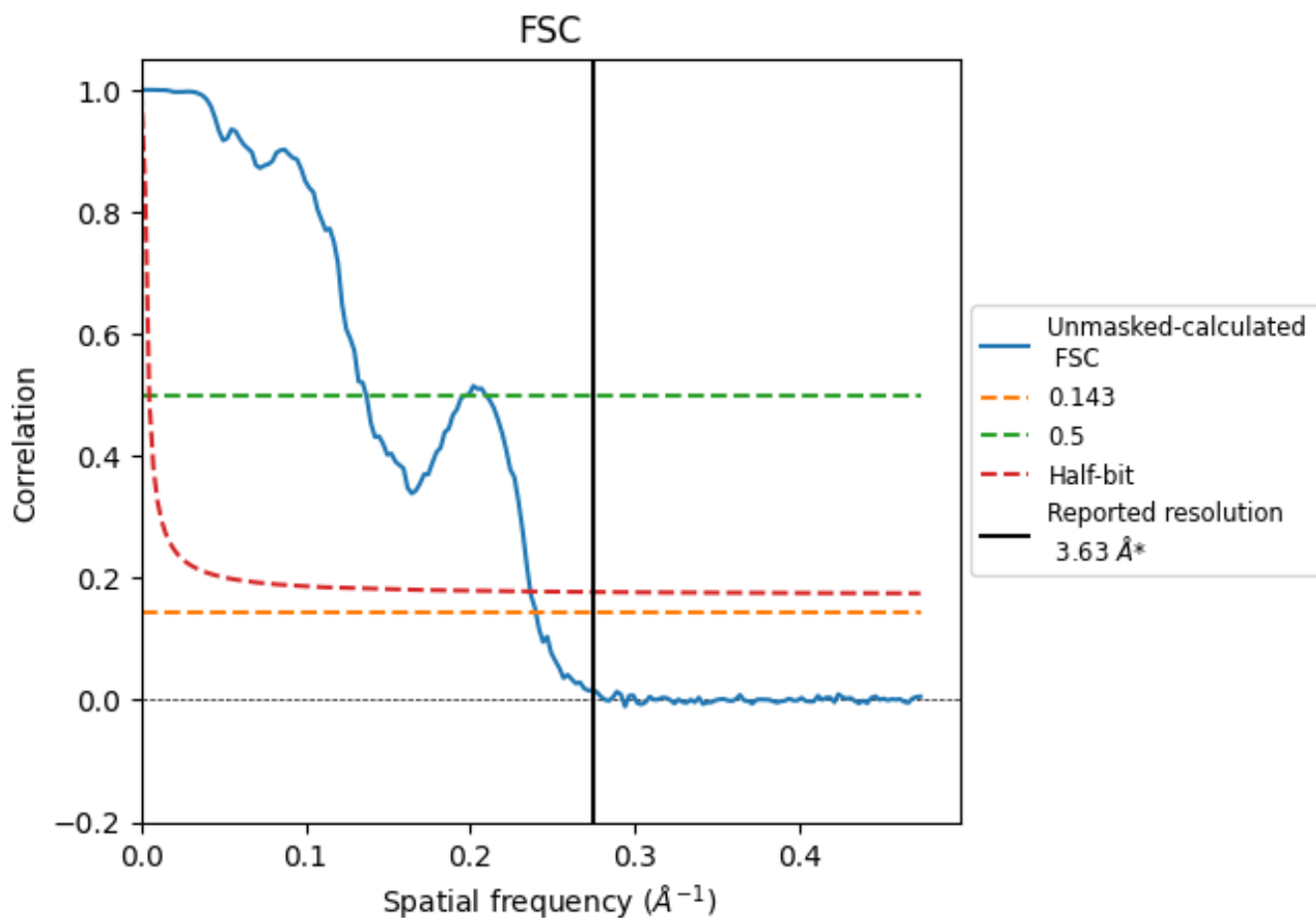


\*Reported resolution corresponds to spatial frequency of 0.275 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.275 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

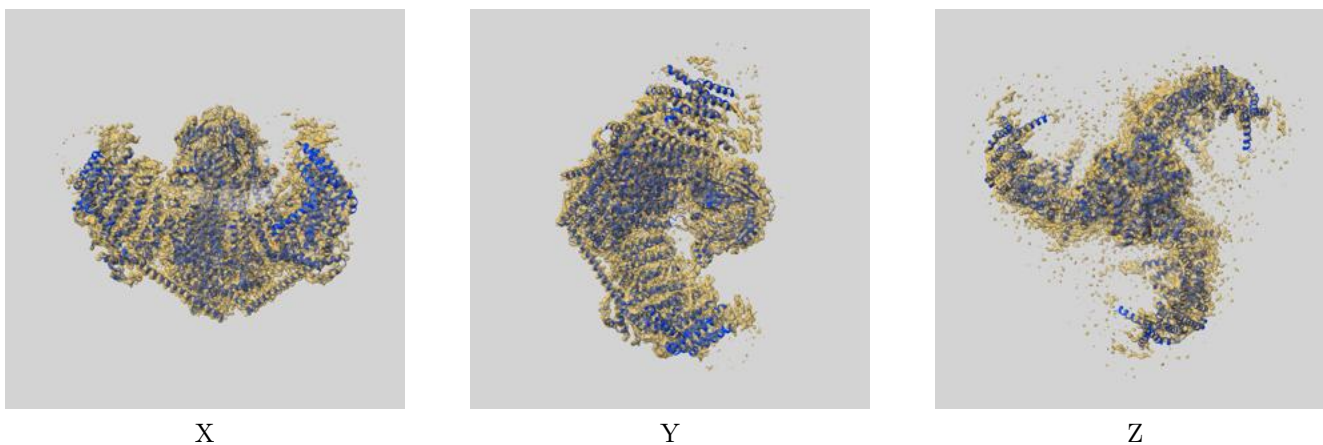
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.63	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.17	7.31	4.22

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.17 differs from the reported value 3.63 by more than 10 %

## 9 Map-model fit [i](#)

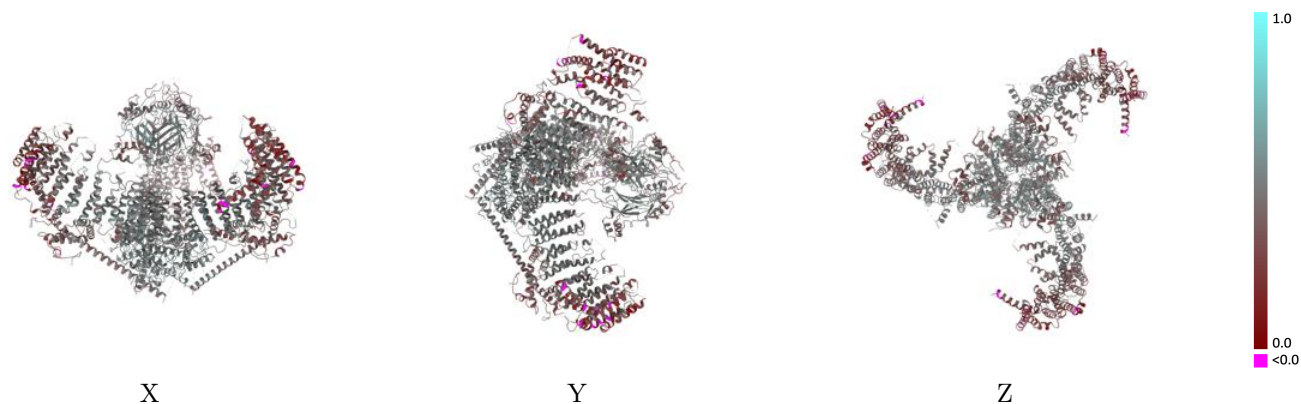
This section contains information regarding the fit between EMDB map EMD-64998 and PDB model 9VED. Per-residue inclusion information can be found in section 3 on page 9.

### 9.1 Map-model overlay [i](#)



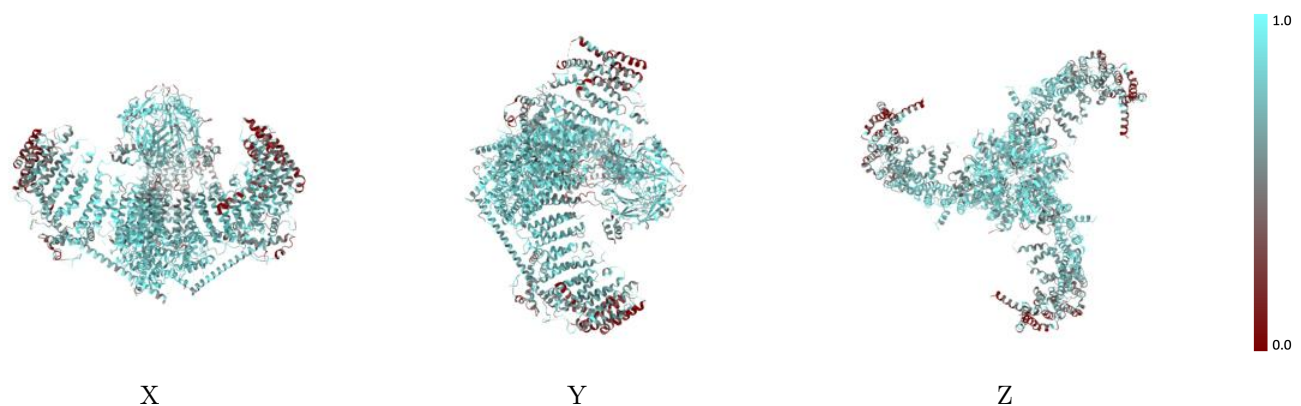
The images above show the 3D surface view of the map at the recommended contour level 0.34 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [i](#)



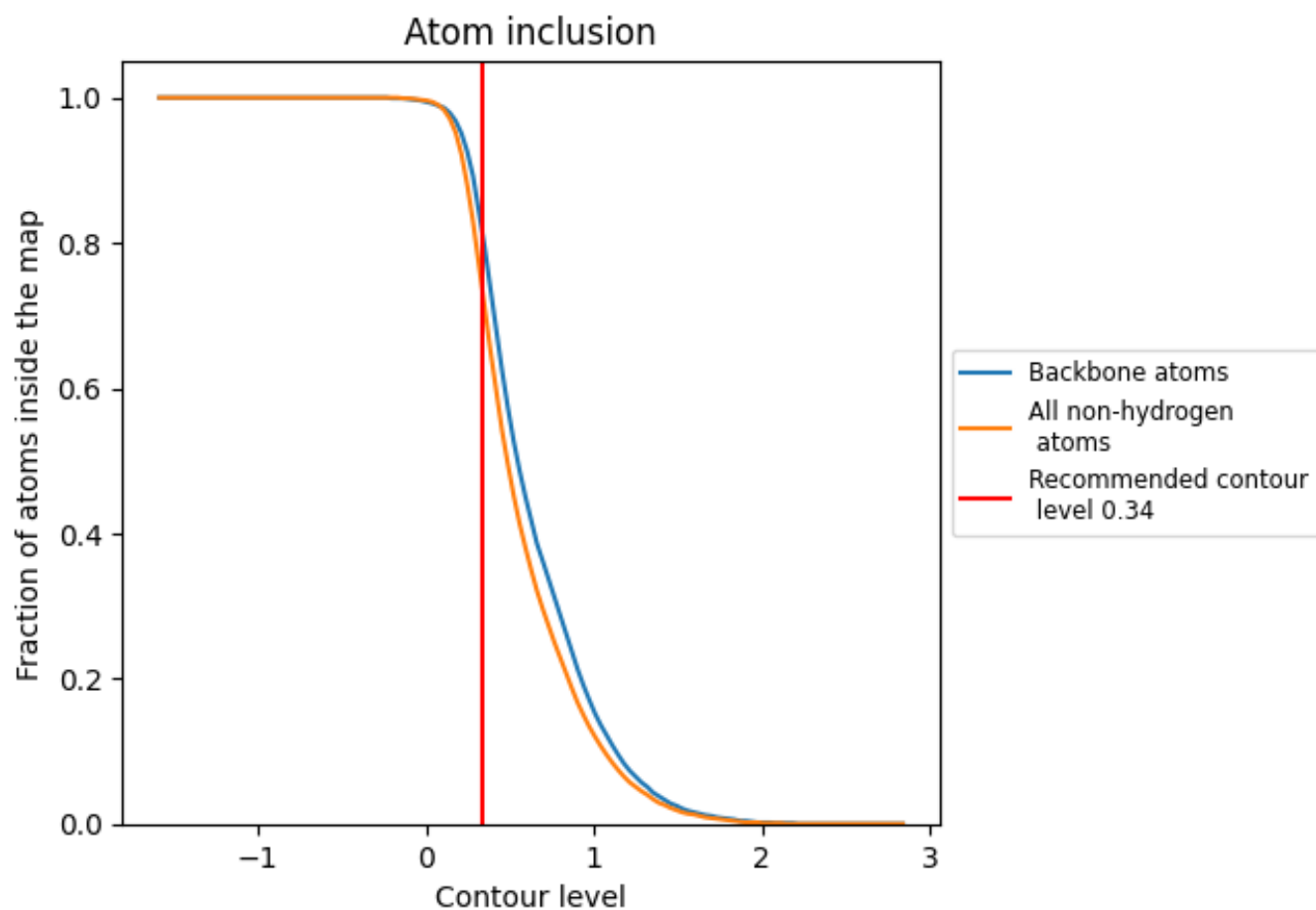
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.34).















## 9.4 Atom inclusion [i](#)



At the recommended contour level, 81% of all backbone atoms, 73% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.34) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7280	 0.4340
A	 0.7260	 0.4290
B	 0.7300	 0.4360
C	 0.7280	 0.4350
D	 0.6960	 0.4690
E	 0.6820	 0.4710
F	 0.7030	 0.4780

